



Man on the Moon

EDITOR'S NOTE: *Destination: the moon. On July 16, three Americans will rocket aloft on a lunar trip. Here is the story of their epic voyage, compiled for your background by Tribune reporters Jack Wilson, of the Washington Bureau, and Lewis Cope. This is the seventh of nine articles.*

By LEWIS COPE

Minneapolis Tribune Staff Writer

The rocks and soil that the Apollo 11 astronauts bring back from the moon late this month will be more valuable to scientists than any precious gems. Yet they will be handled for several weeks like they carry the plague.

The three astronauts returning from man's first exploration of the moon — Neil Armstrong, Edwin Aldrin and Michael Collins — will be world heroes. But they will be put into strict isolation for at least 18 days.

The quarantine that both the men and rocks face is an exercise in super-precaution.

There's no air on the moon. It gets so hot during the lunar day that water would boil — only there's none on the surface. And because the moon lacks an atmosphere, it is not protected from the devastating ultraviolet radiation that pours out from the sun.

The chance for any life existing on the moon under these conditions is "extremely low" — so low it's "at the vanishing point" — said space scientist Dr. Elbert King. "Our probability of being hit by a meteorite while talking here is greater than there being any life on the moon."

Dr. King was in his office at the \$8.5-million Lunar Receiving Laboratory in Houston, Texas, where he is curator. The lab, at the Manned Spacecraft Center, is where the men and rocks will wait out their quarantine periods.

Then the lab will distribute the lunar material to outside scientists for study — presuming it's found germ-free.

If — just if — there is some tiny form of life on the moon, it could be a germ. And if there are moon germs, they probably would be a hearty species that might spread on the much more hospitable earth. And they might spread like wildfire because terrestrial life would lack immunity to them.

The plan is that the astronauts can be poked, probed and studied enough in 18 days so they can be pronounced free of any such germs. It may take slightly longer.

The rocks and soil will be studied for at least 30 days, and probably closer to 50 days, before they are released.

Here is the script for what is to happen as the Apollo 11 crew returns to earth:

The Apollo spacecraft, hanging from three giant parachutes, splashes down in the Pacific.

A frogman sprays the hatch of the spacecraft with a disinfectant. He hands Biological Isolation Garments (BIGs) to the three astronauts. They don them and spray each other.

Then up they go into a hovering helicopter. They breath through special BIG headgear that look like gas masks and have filters to keep in all germs.

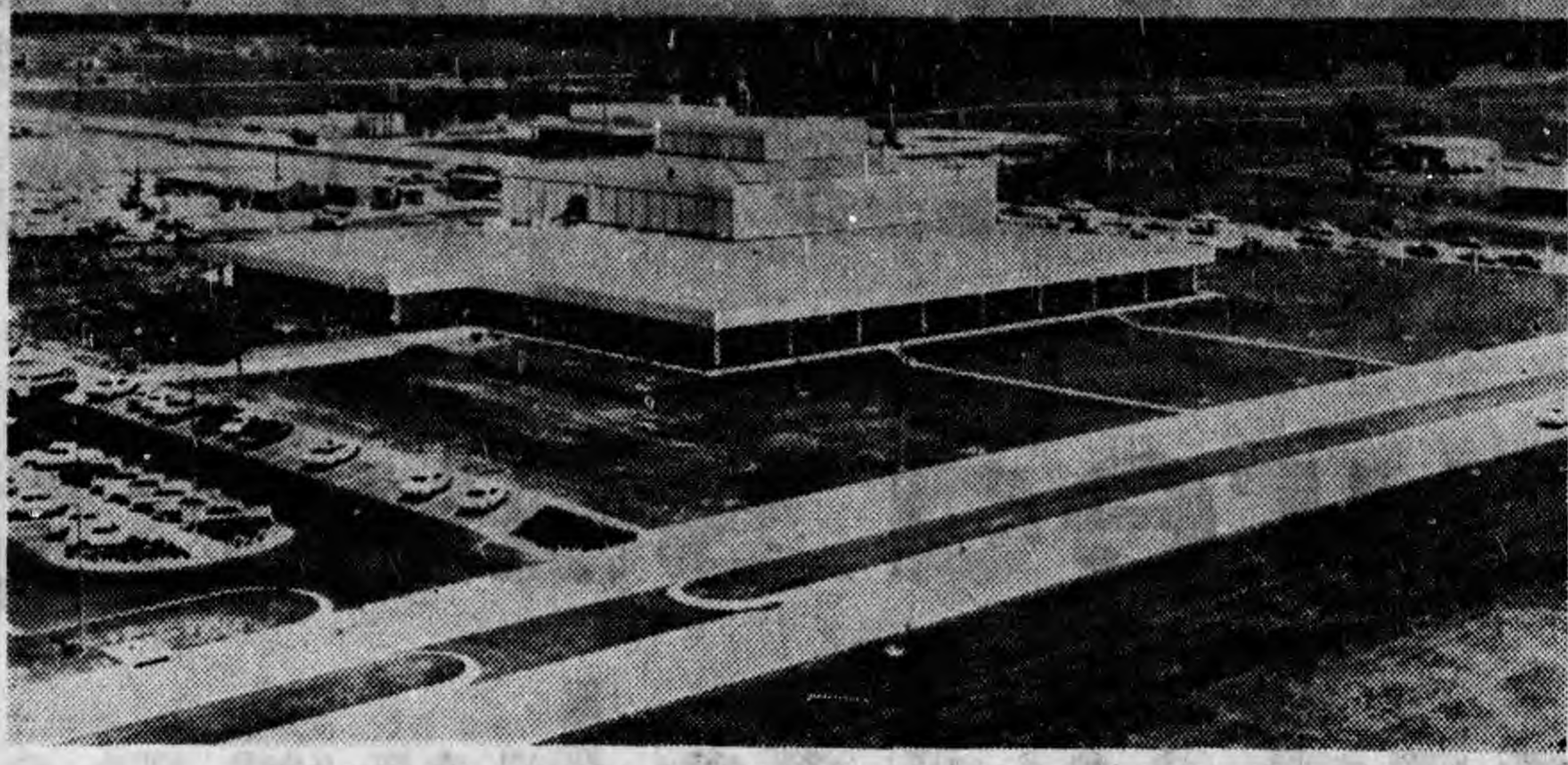
The frogman also wears a BIG, with his mask designed to keep germs out.

(Originally the plan was to keep the heavy Apollo spaceship's hatch closed until it could be lifted by crane onto the deck of the recovery ship and isolated. It was decided, however, that the danger of a crane mishap with the astronauts was too great a risk.

(A few scientists have protested that the new plan might give a chance for any "moon bug" to get out. But

Moon

Continued on Page Six



ASTRONAUTS, MOON ROCKS WILL BE QUARANTINED HERE

It's the Lunar Receiving Laboratory at Houston, Texas

Moon

Continued From Page One

Dr. King noted that "a large group of scientists is concerned that we are having any quarantine at all," since it will delay getting the rocks out for study. Some have even offered to eat moon dirt to prove it can't possibly have any germs.

(An editorial in the leading scientific journal *Science* said: "The astronauts face a difficult and dangerous mission. Were their procedures to be made even more complex because of panicky, last-minute objections, their chance of a safe return would be needlessly jeopardized.")

As the helicopter returns to the recovery ship, only a doctor and a technician greet the three returning space heroes.

They go immediately through a sterile plastic tunnel into a 35-foot-long van called a Mobile Quarantine Facility.

It looks like a house trailer except it has no wheels. It contains beds and a galley. Air is filtered before being let out. It reportedly provides stricter quarantine than any hospital has for contagious patients.

Now the Apollo spaceship is hoisted onto deck. It's outside, seared by heat as it returned through the atmosphere, is sterile. But the cockpit is treated like it has germs in it.

The recovery ship reaches port in Hawaii 55 hours after splashdown. Within two hours the Mobile Quarantine Facility is on a big cargo plane. Eight hours later it is in Houston.

Quickly a truck carries it to the Lunar Receiving Lab.

The astronauts and about 15 others — doctors and technicians — go into a dormitory-like crew receiving area.

The doctors give the spacemen every imaginable test to see if they have brought back an infection from the moon.

The astronauts get to see their families — but only through thick glass walls. They communicate with the outside by telephone.

In another section of the lab, technicians work in "glove boxes" to remove the lunar rocks and soil from the airtight suitcases that the astronauts brought the material back in.

But these workers never get exposed to the lunar material.

The rocks and soil stay in a moon-like vacuum inside the boxes, which are penetrated only by the gloves sealed to the box walls. The technicians stick their hands into the gloves to reach the lunar material and work with it.

A little bit of the lunar material is injected into fish birds, oysters, shrimp, cockroaches and other organisms — to see if there's anything in it that's conceivably a germ.

The lunar material also is tested with a special breed of germ-free mice that has lived all its life in isolation. Such mice would be "exquisitely sensitive to infection" from any germ, Dr. Walter Kemmerer of the lab has noted.

Finally, 13 species of plants and seedlings are exposed to the lunar material to see if it will affect them.

It's the most thorough search ever made for a germ not expected to be found.

Space officials will be playing it super-safe in many ways. Some examples:

Air leaving the Lunar Lab will go through special filters to make sure no germ could escape. And air pressure inside the lab will be kept a little lower than outside, so no air can leak through the building's walls.

The some 120 technicians and others working with the lunar material should never be exposed directly to the material, thanks to the glove boxes. But they will go through a germ-killing ultraviolet air lock whenever they leave the lab, just in case there's been an unknown leak to contaminate them.

They won't carry written notes out, on which a germ might hitch-hike a ride. Instead, copying machines are built into the wall. The notes come out reproduced in a special area outside.

Still, there are plenty of "What if . . ." questions. What if one of the astronauts developed a heart attack or some other problem that can't be handled in the well-equipped clinic inside the crew quarantine area?

"The life of the astronauts takes precedence over the quarantine," according to Dr. Kemmerer.

What if one of the animals or astronauts got sick?

Even though it probably would have been caused by an earthly organism the quarantine period would likely have to be extended to give time to prove this.

What if there's an accident and a lot of lunar material gets out of a glove box?

The technicians and scientists could thus be exposed to moon dust. They would all have to go into the crew quarantine quarters. "We could be stringing hammocks," Dr. King said.

Even before the quarantine ends, scientific study of the lunar rocks and soil will begin. Two limited efforts are involved.

1 Basic analysis of the lunar material will be made in the Lunar lab, so that it can best be distributed among the 142 scientists throughout the nation and world scheduled to receive some for study.

Thus, some preliminary reports of what the moon material is like will be coming out during quarantine. But the most important findings — which hopefully will tell much about the history and nature of the moon — are expected only after later detailed study.

2 So-called time-critical experiments — ones that couldn't be repeated if you waited — will be done in the Lunar Lab during quarantine.

For instance, Dr. Luis W. Alvarez of the University of California at Berkeley, a Nobel prize winner, will be working inside the lab searching for a "magnetic monopole."

Such a particle would have only a north magnetic pole, or only a south magnetic pole — not both as all magnetic objects on earth have.

Cosmic ray impacts on the airless moon might have created them. The hope is that they would last at least for a few days after leaving such conditions.

Dr. Alvarez believes finding a magnetic monopole would "restore symmetry to physics."

The basic symmetry between electricity and magnetism has long been known. But one puzzling exception has been that while a particle can have either a positive or negative electric charge, no one-pole magnetic particle has been found—yet.



BIOLOGICAL Isolation Garments (BIG's) will be worn by astronauts as they leave their Apollo spacecraft after splash-down.



DR. E. A. KING
Receiving lab head

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ity that is both numerically and politically feasible in the existing parliament is that including the Christian Democrats, all of the Socialists and the deputies of the small Republican Party. Unless the two newly divided Socialist factions agree quickly to renew the center-left formula a long crisis seems to be in prospect.

The schism represented a grave setback for the Socialists' effort to offer the Italian working class an alternative to the Communist Party as an instrument of progressive reform. Despite unprecedented economic prosperity, Italy today has increasing numbers of citizens who are discontented with their shares of the nation's riches and who are becoming militant.

THE SOCIALIST breakup came after the failure of a last-ditch attempt by Foreign Minister Pietro Nenni, 78-year-old patriarch of Italian socialism, to patch up a compromise between left-wing and moderate factions of the party.

Apart from the consequences for the country, the Socialist split represented a personal tragedy for Nenni.

When his compromise proposal was rejected last night by the Socialist Party's Central Committee, by a vote of 67 to 52, Nenni resigned his presidency of the unified party and left by car for his home.

His plan was for all seven factions of the party to accept rededication to the principles enunciated in the 1966 charter of the unification voted by delegates of the old Socialist and Democratic Socialist Parties.

THESE CHARTED a reformist course, a transition from capitalism to socialism

MONDAY: The men who will get moon rocks.